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Bistorta tenuifolia (H. W. Kung) Miyam. & H. Ohba (Polygonaceae), a New Addition to the Flora of Nepal.
Studies of the Flora of Mustang, Central Nepal, 3.

Futoshi MIYAMOTO[a] and Hideaki OHBA[b]

[a]Department of Agriculture, Tokyo University of Agriculture,
Funako1737, Atsugi-city, Kanagawa, 243-0034 JAPAN;
E-mail: miya@nodai.ac.jp
[b]Department of Botany, University Museum, University of Tokyo,
Hongo 7–3–1, Bunkyo-ku, Tokyo, 113-0033 JAPAN

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Bistorta tenuifolia (H. W. Kung) Miyam. & H. Ohba is proposed as a new combination based on *Polygonum tenuifolium* H. W. Kung, and is reported from the flora of Nepal for the first time. *Bistorta tenuifolia* is distinguished from its closest relative, *B. vivipara* (L.) Gray, in having linear radical leaves, lanceolate to oblong bracts and occurrence of a single flower in each node.

Key words: *Bistorta*, Flora, Nepal, Polygonaceae, taxonomy.

The genus *Bistorta* is one of the most significant genera in the alpine flora of the Sino-Himalayan region. During our study of the flora of Mustang District, Central Nepal from 2000 (Iokawa 2001, Noshiro and Amano 2002, Miyamoto and Ikeda 2003), we found individuals akin to *Bistorta vivipara* (L.) Gray that had bulbils on the lower part of the racemes.

These individuals were identical to *Polygonum tenuifolium* H. W. Kung that was described from Taibaishan, Shaanxi [Shensi] Province, China (Kung 1935). Liu (1987, 2003) treated it as a variety of *P. vivipara*, and Li (1991) provided a name var. *angustum* A. J. Li for it.

Polygonum tenuifolium H. W. Kung is a later homonym of *Polygonum tenuifolium* Steph. ex Ledeb. which was published in Flora Rossica (vol. 3, p. 531) in 1850.

Kung's *P. tenuifolium*, for which a new combination *Bistorta tenuifolia* (H. W. Kung) Miyam. & H. Ohba is proposed here, differs from the next closest species, *Bistorta vivipara*, in having linear radical leaves, lanceolate to oblong bracts and nodes with a single flower (Fig. 1). These features are stable and constant throughout the specimens examined. This is also similar to *B. tubistipulis* Miyam. & H. Ohba and *B. sherei* H. Ohba & S. Akiyama in having linear leaves, but differs from *B. tubistipulis* in having lanceolate to oblong against obovate bracts and lanceolate (not oblong) bracteoles with acute (not obtuse) apex, and from *B. sherei* by the cauline leaves with tubular, versus elongated, and auriculate stipules, as shown in the following key:

1. Inflorescence nodes with a single flower; radical leaves linear to linear-oblong
  2. Stipules of cauline leaves elongated and auriculate .... *B. sherei*
  2. Stipules of cauline leaves tubular
    3. Bracts lanceolate to oblong; bracteoles lanceolate with acute apex ....

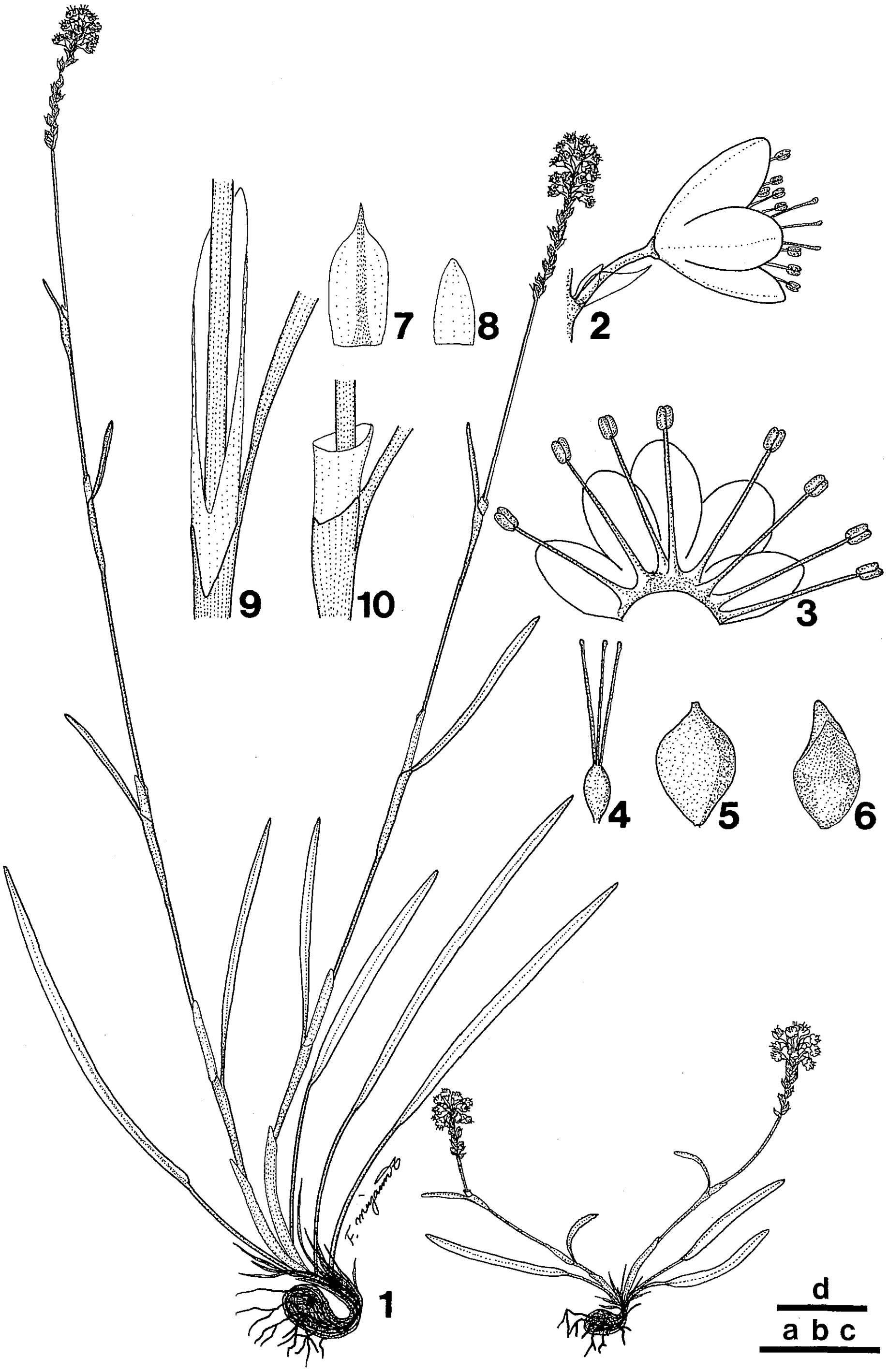

Fig. 1. *Bistorta tenuifolia* (H. W. Kung) Miyam. & H. Ohba (Miyamoto & al. 20210045). 1: Habit of plant. 2: Flower. 3: Perianth and stamens. 4: Pistil. 5: Ovary. 6: Bulbil. 7: Bract. 8: Bracteole, 9: Stipule of lower cauline leaf. 10: Stipule of upper cauline leaf. Scales: a (2 cm) for 1; b (2 mm) for 2, 3, 4, 5 and 6; c (4 mm) for 9 and 10; d (1 mm) for 7 and 8.

.... *B. tenuifolia*

3. Bracts obovate: bracteoles oblong with obtuse apex .... *B. tubistipulis*

1. Inflorescence nodes with 2 flowers; radical leaves oblong
  2. Racemes cylindrical, flowering stem erect .... *B. vivipara*
  2. Racemes conical, flowering stem decumbent .... *B. albiflora*

Bistorta tenuifolia is distributed in Nepal and Xizang (Tibet), Qinghai, Yunnan, Sichuan, Gansu and Shaanxi provinces in China (Fig. 2). This species occurs on exposed screes at an elevation of 4500 m in Mustang, where *Bistorta vivipara, Gypsophyilla cerastoides*, *Silene nigrescens*, *Leontopodium monocephalum*, *Androsace* sp. and *Corydalis* sp. were found together with this species.

Bistorta tenuifolia (H. W. Kung) Miyam. & H. Ohba, comb. nov. [Figs. 1, 2]

Polygonum tenuifolium H. W. Kung in Contr. Inst. Bot. Natl. Acad. Peiping **3**: 367 (1935), non Stepf. ex Ledeb. (1850). – *Polygonum viviparum* var. *tenuifolium* (H. W. Kung) Y. L. Liu in J. North W. Teachers' Coll., Nat. Sci. **3**: 45 (1987). **Type**: China, Shaanxi [Shensi], Near Pahsiant'ai, T'aipaishan, 3700 m (T. P. Wang W1846, 5 Aug. 1933, PE–holotype !).

Polygonum viviparum var. *angustum* A. J. Li in Acta. Bot. Boreal. Occident. Sin. **11**: 351 (1991).

Rhizome swollen, bulbous, dark brown, covered with old leaf sheaths. Flowering stems 1–2(–3), ascendent to decumbent, 3–22 cm long, purple, partly pale green. Radical leaves 3–5, petiole 0.5–3 cm long, pale green partly purple; blades 1–9 cm long, 2–3 mm wide, linear, apex acute, base narrowly decurrent, margin entire, upper surface glabrous, pale green, lower surface covered with short white hairs and glandular hairs or glabrous, pale green; stipule 0.5–3.0 cm

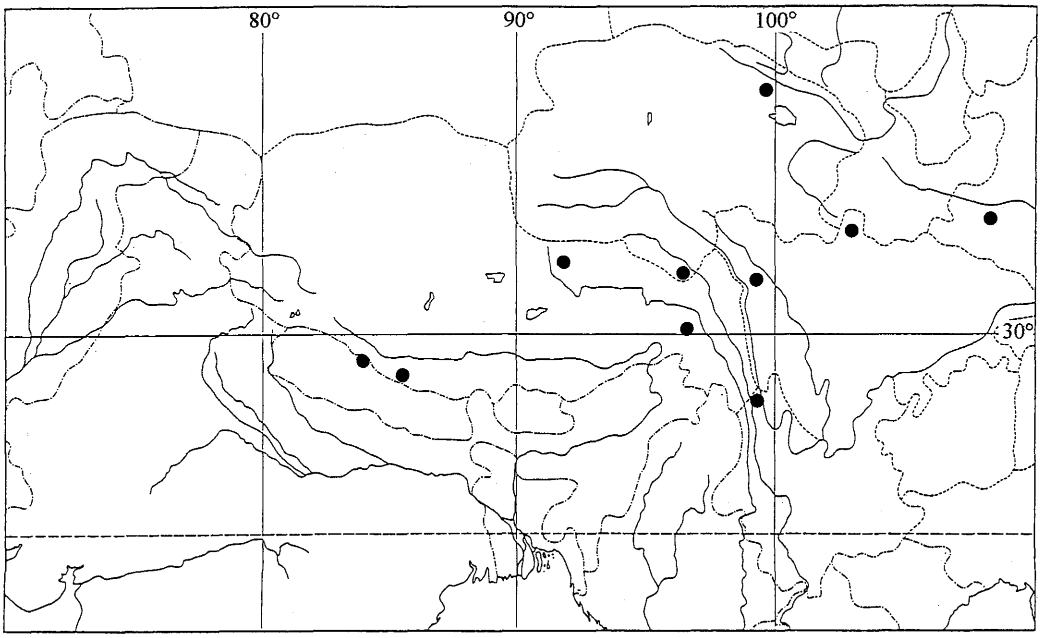

Fig. 2. Distribution of *Bistorta tenuifolia*.

long, membranaceous, brown, apex acute. Cauline leaves 1–4; blade linear, 0.2–8 cm long, apex acute, base narrowly decurrent, margin entire; stipule of lower leaves 0.5–2 cm long, apex acute; stipule of upper most leaf 0.1–0.3 cm long, membranaceous, brown, tubular and apex truncate. Raceme solitary, cylindrical, 1–3.5 cm long, 0.5–0.8 cm wide. Flowers white, solitary at each node of rachis, proliferous at lower nodes; pedicel 2–3.5 mm long, pale green; bracts lanceolate to oblong, membranaceous, apex acuminate to acute, pale brown, 1.3–3 mm long, 0.3–0.6 mm wide; bracteoles membranaceous, lanceolate, apex acute, 0.8–1.8 mm long, 0.2–0.4 mm wide. Perianth segments 5, oblong, 2–3 mm long, 1.2–1.4 mm wide, apex rounded. Stamens 8; filaments 2.0–2.5 mm long, white; anthers 0.4–0.6 mm long, 0.2–0.3 mm wide, brown; nectary glands at base, brown. Pistil 2.5–3 mm long; stigmas 3, 0.1–0.2 mm long; styles 1.8–2 mm long, white; ovary trigonous, 1.8–2 mm long, pale green to purple. Bulbil 1.6–2 mm long, 1–1.2 mm wide.

Specimens examined. Nepal: Dhawalagiri Zone, Mustang Distr., stay at Pongio Kharka, a kharka between Sangda Pass and Sangda village, 28°52′37.4″N, 83°42′57.2″E, 4550 m (Miyamoto & al. 20210045, 11 Aug. 2002, TI); loc. cit., 28°52′32.5″N, 83°42′20.5″E, 4570 m (Miyamoto & al. 20210059, 11 Aug. 2002, TI); loc. cit., 28°51′40.3″N, 83°44′41.3″E, 3870 m (Miyamoto & al. 20210101, 13 Aug. 2002, TI). China. Tibet (Xizang): Gyirong, 4200–4400 m (Xizang medical plants expedition team 641, 27 Jun. 1972, PE); Amdo, 5100 m (Xizang-Qinghai Botanical expedition team 10808, 5 Aug. 1975, KUN); Baxoi 4800 m (Xizang botanical expedition team 73-1258, 25 Aug. 1973, KUN). Qinghai: Yushu, Batan, 4000 m (collector unknown 129, 20 Jun. 1964, PE). Yunnan: Chungtien, Bianrentung, 3400 m (T. T. Yü 12126, 12 Jul. 1937, PE). Sichuan: Zoige, Duode, 3440 m (Chen & al. 8167, 20 Jul. 1984, PE); Dege, Queershan, 4300 m (collector unknown 7205, 25 Jun. 1975, PE). Gansu: Sunan, Dahe, 3300 m (Hexi expedition team 217, 15 Aug. 1967, PE). Shaanxi [Shensi]: Taibaishan, Eryaihai (T. N. Liou & P. C. Tsoong 2899, 30 Jul. 1938, PE).

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References

Iokawa Y. 2001. A botanical expedition to the Mustang area, central Nepal in 2000. Newslet. Himal. Bot. (28): 13–17.

Kung H. W. 1935. Polygonaceae of Chunlingshan. Contr. Inst. Bot. Natl. Acad. Peiping **3**: 367.

Li A. R. 1991. A revision of *Polygonum viviparum* L. var. *tenuifolium* (Kung) Y. L. Liu. Acta. Bot. Boreal.-Occident. Sin. **11**: 351.

Liu Y. L. 1987. The species of *Polygonum* and their distribution in Gansu. J. North W. Teach. Coll. (Nat. Sci.) **3**: 39–48.

—— 2003. Polygonaceae. *In*: Wu Z. and Raven P. H. (eds.), Flora of China **5**: 294.

Miyamoto F. and Ikeda H. 2003. Japan-Nepal Botanical Expedition to Upper Mustang in 2002. Newslet. Himal. Bot. (31): 1–7.

Noshiro S. and Amano M. 2002. Japan-Nepal botanical expedition to Upper Mustang in 2001. Newslet. Himal. Bot. (29): 1–7.

宮本　太[a]，大場秀章[b]：ネパール中部ムスタン地方の植物相研究（3）．ネパール新産の *Bistorta tenuifolia* (H. W. Kung) Miyam. & H. Ohba（タデ科）

ネパール，ムスタン地方より採集された *Bistorta vivipara* (L.) Gray の近縁種について分類学的検討をおこなった．その結果，中国・陝西省太白山より記載された *Polygonum tenuifolium* H. W. Kung に一致することが明らかになった．本種は *Bistorta vivipara* に近似するが，根出葉が線形となること，花序の節に一個の花を生じること（*Bistorta vivipara* は各節に二個），苞が披針形または楕円形となることで明らかに区別できる．イブキトラノオ属に移し，*Bistorta tenuifolia* (H. W. Kung) Miyam. & H. Ohba と組みかえた．

（[a]東京農業大学農学部，
[b]東京大学総合研究博物館）